**Table S1. Strains used in this study**

|  |  |  |
| --- | --- | --- |
| Strain | Genotype | References |
| AD16 | Δ*pro-lac* *thi*/F' *lacIq* *Z*Δ*M15* *Y*+ *pro*+ | (Kihara et al., 1995) |
| SN56 | AD16, Δ*bepA* | (Narita et al., 2013) |
| SN259 | AD16, Δ*bepA ΔsurA*::*kan* | (Narita et al., 2013) |
| RM2243 | AD16, *bepA(E137Q)* *purC80*::Tn*10* | This study |
| RM3654 | AD16, Δ*bepA* *bamA*+ *zae502*::Tn*10* | This study |
| RM3655 | AD16, Δ*bepA bamA(S439C) zae502*::Tn*10* | This study |
| JE6631 | *Hfr:str thi polA1* | (Mori et al., 2002) |
| RM2091 | JE6631, *purC80*::Tn*10* | This study |
| YH188 | JE6631, *zae502*::Tn*10* | (Hizukuri and Akiyama, 2012) |
| MC4100 | F- *araD139* Δ*(argF-lac)U169 rpsL150 relA1 flbB5301 deoC1 ptsF25 rbsR* | (Casadaban, 1976) |
| CU141 | MC4100/F' *lacIq* *lacZ*+, *Y*+, *A*+ | (Akiyama et al., 1994) |
| HM1742 | CU141 *ara*+ | (Mori and Ito, 2006) |
| RM3588 | HM1742, *kan araC*-P*araBAD*-*lptD* | This study |
| DY330 | W3110, Δ*lacU169* *gal490* λ*cI857* Δ(*cro-bioA*) | (Yu et al., 2000) |
| RM3444 | DY330, *kan araC*-P*araBAD*-*lptD* | This study |

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